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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/483,712	01/14/2000	Tongbi Jiang	3815US (98-0670)	8743

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EXAMINER

WARREN, MATTHEW E

ART UNIT PAPER NUMBER

2815

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/483,712

Applicant(s)

JIANG ET AL.

Examiner

Matthew E. Warren

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the RCE and Amendment filed on January 12, 2005.

Petition to Withdraw Abandonment

The Applicant's petition to withdraw the holding of abandonment filed on January 31, 2005 is moot because the RCE dated January 12, 2005 was timely filed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-9, and 13-20 are rejected under 35 U.S.C. 102(b) as being anticipated by King et al. (US 5,677,566).

In re claims 1 and 2, King et al. shows (fig. 3) a chip scale package comprising: a semiconductor die (14) having an active surface having a plurality of bond pads (18) thereon; a dielectric element (16) having an upper surface and a lower surface, the lower surface of the dielectric element attached to a portion of the active surface of said semiconductor die; a plurality of conductive lead frame members (13) having inner ends laterally spaced from said the plurality of bond pads, each conductive lead frame member of the plurality of conductive lead frame members having an upper surface (12) and a lower surface, a portion of the lower surface of each conductive lead frame

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member of the plurality of conductive lead frame members being attached to a portion of the upper surface of the dielectric element (16) for connecting each conductive lead frame member of the plurality of conductive lead frame members to the active surface of the semiconductor die; a plurality of discrete conductive bond members (22), at least one discrete conductive bond member of the plurality of conductive bond members connecting the inner end of each conductive lead frame member of said-the plurality of conductive lead frame members to at least one bond pad of the plurality of bond pads on the active surface of the semiconductor die; a plurality of conductive carrier bonds (28), at least one carrier bond of the plurality of conductive carrier bonds directly disposed on the upper surface of each conductive lead frame member of the plurality of conductive lead frame members at a location remote from the inner end thereof and extending transversely from the upper surface thereof, and an encapsulating material (26) disposed about at least portions of the semiconductor die, about the dielectric element, between the active surface of the semiconductor die and the lower surface of a portion of each lead frame member of the plurality of conductive lead frame members, over outer ends of the lead frame members of the plurality, over the plurality of discrete conductive bond members and over a portion of each carrier bond of the plurality of conductive carrier bonds another portion of each carrier bond extending beyond an outer surface of the encapsulating material.

In re claim 5, King et al. shows (fig. 3) wherein the upper surface and lower surface of the dielectric element are attached respectively to a portion of the lower surface of each conductive lead frame member of the plurality of conductive lead frame

members and a portion of the active surface of the semiconductor die connecting portions of said the plurality of conductive lead frame members and to portions of the active surface of the semiconductor die.

In re claims 6-9, and 15-18 King discloses (col. 3, lines 10-21) wherein the plurality of conductive lead frame members comprises a plurality of lead fingers. The plurality of conductive lead frame members comprises a conductive metal. The plurality of discrete conductive bond members comprises a conductive metal. The plurality of discrete conductive bond members comprises bond wires. The plurality of conductive carrier bonds includes metal. King also shows (fig. 4) that the plurality of conductive carrier bonds is selectively located on the upper surfaces of the plurality of conductive lead frame members forming an array over the active surface of the semiconductor die and that the plurality of conductive carrier bonds comprises solder balls. The encapsulating material comprises a substantially non-conductive material (col. 3, lines 65-67) having a low modulus of elasticity (because molded plastic is used).

In re claims 19 and 20, King shows (fig. 3) that each conductive carrier bond of the plurality of conductive carrier bonds further comprises an upper portion and a lower portion, the lower portion of a-each conductive carrier bond being attached to the upper surface of an associated conductive lead frame member of the plurality of conductive lead frame members. The encapsulating material is disposed only about the lower portions of the plurality of conductive carrier bonds.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al. (US 5,677,566) as applied to claims 2 and 9 above and further in view of Lee et al. (US 5,894,107).

In re claims 3, 4, and 10-12, King does not specifically disclose the materials of the dielectric element, the materials of the bond wires, or the types of conductive bond members, but such elements are not patentably distinguishable over the cited art because such materials are well known in the art. However, Lee et al. discloses a (col. 4, line 60 – col. 5, line 20) a chip scale package in which a dielectric element may be any adhesive including polyamide tape or films. The conductive bond members may comprise any conventional connecting members including metal, wires, gold, TAB or thermocompression bonds. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the materials of King by using specific materials of polyimide for the dielectric element, gold wires, and TAB or thermocompression bonds for the discrete conductive bond members as taught by Lee to provide well known, suitable conductor connections to form the chip scale package.

Response to Arguments

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (571) 272-1737. The examiner can normally be reached on Mon-Thur and alternating Fri 9:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEW

April 1, 2005


TOM THOMAS
SUPERVISORY PATENT EXAMINER